

Institution: University of Oxford		
Unit of Assessment: 29 Classics		
Title of case study: Coin Hoards of the Roman Empire: the digital preservation of transnational heritage		
Period when the underpinning research was undertaken: 11 March 2013-31 Dec 2020		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Chris Howgego	Director CHRE	1988-present
Andrew Wilson	Director CHRE	2000-present
Marguerite Spoerri-Butcher	Research Fellow, CHRE	2016-present
Period when the claimed impact occurred: 1 Aug 2013- 31 Dec 2020		
Is this case study continued from a case study submitted in 2014? N		
1. Summary of the impact (indicative maximum 100 words)		
<p>Coin Hoards of the Roman Empire (CHRE) is a participatory research and digital conservation initiative that has enhanced awareness of imperial hoards internationally, contributing to their preservation. In 2015, it launched a web app for the empire-wide recording and study of imperial hoards, providing a free international platform for multiple users and institutional partners. Participation has changed the perception of hoards in Israel and Belgium, facilitated national attempts to recover smuggled goods in Romania, influenced changes to the curation of coin by museum professionals in Germany, and led to the creation a new MA course in the Netherlands.</p>		
2. Underpinning research (indicative maximum 500 words)		
<p>CHRE is a collaborative project led by Chris Howgego from the Ashmolean Museum and Andrew Wilson from the Oxford Roman Economy Project (OXREP) [R5] with Marguerite Spoerri-Butcher, and has been generously supported by the Augustus Foundation (2013-2023). It fills a major lacuna in the digital coverage of coin hoards from antiquity. It collects information about hoards of all coinages in use across the expanse of the Roman imperium between c. 30 BCE and 400 CE. The project aims to lay the foundations for a systematic Empire-wide study of hoarding in order to tackle questions about the nature of the Roman economy, the circulation of coin during the height of the Empire and its decline, and the history of monetary behaviour and hoarding in antiquity [R6, R2]. In 2019, the scope of the project was extended to cover hoards of Roman coin from regions outside the Empire [R6].</p> <p>CHRE builds upon the comprehensive online typology of all Roman coinage. Roman Provincial Coinage Online (RPCO), founded by Howgego in 2005, supplemented existing online typologies of imperial coinage. The latter were based on standard published works of reference, but RPCO required primary research to identify typologies of Roman civic coinage in an area stretching from the Iberian Peninsula to Dacia and Egypt. RPCO is a continuously updated reference work involving input from the 10 leading international collections. Contributions are crowdsourced from scholars, researchers and collectors, and are rigorously peer reviewed. Work is still ongoing but RPCO is already the standard digital resource for Roman provincial coin: Google analytics 2019-2020 records 1,644,812-page views; 83,112 sessions; and 22,048 users from 115 countries [R4].</p> <p>CHRE has developed the approach to crowdsourcing trialled with RPCO to develop the world's largest participatory digital conservation initiative in numismatics. The project has expanded the chronological, geographic and conceptual range of the study of Roman imperial</p>		

hoards, and it offers a state-of-the-art heritage management tool that allows users to compare hoarding and coin circulation in different regions, as well as the reporting of archaeological finds.

The CHRE project web app, launched in 2015, records the details, archaeological context, provenance and documentary evidence for Roman hoards with a geographical scope (from Ireland to India) that has never previously been attempted. All data are fully searchable, and the results of searches can be exported, or visualized through conventional satellite, Roman imperium, or contemporary street maps and heat maps; furthermore, hoards can be linked to local ancient place names recorded in the Pleiades gazetteer (<https://pleiades.stoa.org>). This has set a new world standard for the online documentation of hoards and has raised awareness of their historical value [R3].

The database [R1] currently holds information on 15,300 published hoards and over 5 million individual gold coins from within and outside the Roman Empire. Current work is focused on extending geographical coverage and systematically recording hoards at the level of the individual coin (including full descriptions and standard references), where such data are available. Entries are accompanied by 4000 related searchable bibliographical references which contain active links to the hoards in the database. The engagement of the project with Linked Open Data for Numismatics (<http://nomisma.org/>), including providing leadership for the international hoards committee responsible for determining classification, has enhanced its interoperability with related digital projects, e.g. the 'Framing the Late Antique and Early Medieval Economy' (FLAME) project at Princeton. CHRE hoard and coin web references (URIs) are unique and stable and these permanent identifiers are increasingly being used by external projects or in publications.

3. References to the research (indicative maximum of six references)

- R1.** [Dataset, listed in REF2] Coin Hoards of the Roman Empire Project: - <https://chre-ref.ashmus.ox.ac.uk> the online database currently comprising 15,000 hoards containing five million coins.
- R2.** [Edited Book] A. Wilson and A. Bowman (2019 eds.), *Quantifying the Roman Economy, Methods and Problems*, Oxford. DOI: [10.1093/acprof:oso/9780199562596.001.0001](https://doi.org/10.1093/acprof:oso/9780199562596.001.0001)
- R3.** [Journal Article, listed in REF2] M. Spoerri Butcher (2017), 'Quantifying relative coin production during the reigns of Nerva and Trajan (AD 96-117): Reka Devnia reconsidered in the light of regional coin finds from Romania and the Northwest', *Revue Belge de Numismatique et de Sigillographie* CLXIII: 53-86 (with B. Hellings). Available at: <https://ora.ox.ac.uk/objects/uuid:96819bb6-be39-43be-9318-85484dac5a9c>
- R4.** [Dataset, listed in REF2] Roman Provincial Coinage online: <https://rpc-ref.ashmus.ox.ac.uk> (2005; new web app version 2019)
- R5.** [Dataset] Oxford Roman Economy Project: <http://www.romaneconomy.ox.ac.uk/>
- R6.** [Edited Book] A. Wilson and A. Bowman (2017 eds.), *Trade, Commerce and the State in the Roman World*, Oxford. DOI: [10.1093/oso/9780198790662.001.0001/oso-9780198790662](https://doi.org/10.1093/oso/9780198790662.001.0001/oso-9780198790662) 'The synthesis of recently discovered or compiled archaeological material, often by scholars responsible for its initial production, makes this book invaluable to economic historians.' – *Bryn Mawr Classical Review*, 29/12/2018

4. Details of the impact (indicative maximum 750 words)

Since its launch in 2015, the CHRE project has supported 48 institutions in 25 different countries to enable them to put this important aspect of their national heritage online [E1]. CHRE created a well-targeted network of institutional partners, which covers Europe and the US, 7 countries in the Balkans (Slovenia, Croatia, Serbia, Macedonia, Romania, Bulgaria, Greece) and 5 in the Levant and North Africa (Turkey, Lebanon, Israel, Egypt, Tunisia). **17 stakeholders are public bodies outside the HEI sector**, including: **2 antiquities authorities** (Israel, Institut national de recherches archéologiques préventives, France); **10 public museums** (Bulgaria, Croatia, Denmark, England, Germany, Hungary, Macedonia, Scotland, Slovenia, Tunisia); **2 libraries** (Belgium, France), **1 national finds scheme** (Switzerland) and a **transnational finds scheme** (The European Finds Network); **1 national bank** (Netherlands); and **1 numismatic society** (France). Google Analytics of the project

website (1/9/2016- -23/07/2020) records 12,455 users, and 31,743 searches with an average duration of 17 minutes. The web app has been used extensively in 58 different countries including: US (3,266) and the UK (1,728) Turkey (338) Romania (261) Bulgaria (220) Russia (166) and Switzerland (160) [E1.1].

The scale and composition of the CHRE network of collaborators has been integral to its international impact. Specific local impacts have been diverse, and often unexpected. Between 2016 and 2020 CHRE has:

1. Helped heritage professionals to promote the recording and documentation of hoards

In Belgium, hoards were seen to be of limited, local historical value, and funding to put documentation online had proved elusive. CHRE offered a platform and technical support from 2016 onwards. As the Keeper of the Cabinet des Médailles, Bibliothèque royale de Belgique notes, 'Recording these finds online for the general public [has] created a more general interest in history, as well as an awareness of the importance of declaring finds...to the authorities,' and he adds, 'It is very important for us to be involved in the CHRE initiative as it is a major argument for encouraging local museums to open their holdings to the general public' [E2].

2. Influenced changes to coin curation

The contents of most recorded imperial hoards have been scattered in collections across the world, dispersed in trade, or even melted down. CHRE allows some to be digitally reconstructed. As the curator from the Münzkabinett der Staatliche Museen zu Berlin notes: 'CHRE entries...on particular hoards...provide us with a very useful and much appreciated tool enabling us to link coin hoard data to the individual coin entries in our database.' The web app allows curators to recontextualize historical finds, such as those from Xanten (found in 1764), and Aboukir (Egypt), parts of which are now in Berlin. As the curator comments, 'CHRE allow[s] us not only to profit from a highly sophisticated presentation of such finds (and research on those hoards by CHRE), but also builds unique identifiers (permalinks) of those hoards, which allow not only us, but any collection or museum with coins deriving from such hoards...to easily exchange our data internationally.' This has changed the way coins are curated by staff at the museum: 'The regulations regarding documentation standards in use here in the Münzkabinett [now] make the processing of CHRE-entries obligatory' [E3].

3. Made national heritage available to national and international audiences

Prior to 2016, the Israel Antiquities Authority (IAA) lacked the capacity to share their own holdings and detailed paper records of 350 Roman imperial coin hoards from Israel online – an estimated 75 of which were unpublished. The head of the coin department comments: 'The CHRE team-member who came to train staff, brought Roman coin hoards to the foreground of the IAAs activity [by] publicizing the number of Roman...hoards in its holdings [and] expos[ing] the numerous unpublished Roman hoards to the public...[This was the IAA's] first international collaboration. Since then the IAA has formalized two other international collaborations between its Coin Department and foreign institutions. This is due in no small part to the success of the CHRE Project'. In September 2019, the IAA installed a new display of the most important hoard finds from Israel at the Bank of Israel, revealing two hoards to the public for the first time. The oldest hoard contains coins minted in Jerusalem during the Great Revolt, or Jewish-Roman War (66-73 CE), and the display features the largest hoard ever found in Israel, dating to c. 220 CE and containing over 10,000 silver coins found in the excavation of the Nabataean city of Mamshit/ Mampsis in the Negev [E4].

4. Led to the recovery of looted national heritage and smuggled goods

In Romania, the web app has been used to analyse coin circulation, leading to the recovery of looted coin. The police commissioner of the criminal investigation department of Cluj Napoca, who oversees the protection of cultural heritage from Romania and neighbouring countries notes: 'The CHRE website [was] used to identify coin types that were characteristic of certain countries in specific chronological segments.' Augustin Lazăr, who served as Romania's Prosecutor General (2016-2019) says that CHRE, 'was very useful for our team [for] checking various coin types distribution – especially those of silver and gold – whether certain coins could have come from Romania or they were common types without a certain

model of provenance...in the last years we manage to recover more 1,027 gold coins Koson (circa 8.62 kilos, 37 gold coins Lysimachos type, 213 silver coin Koson)' [E6.1].

In 2018, the project web app was used on the Security Studies training programme at University Babes-Bolyai, Cluj-Napoca. The course tutor notes: 'Owing to the large number of filters offered by this application we track...the distribution of hoards (of certain metals at certain dates and on specific areas); the presence of counterfeited coins; the dates of publication and the richness of information; findspot of discovery versus findspot of keeping (owner)'. The Institute of Archaeology of the Romanian Academy has created a hoard database of the pre-Roman and Roman imperial hoards from Romania on the basis of data from the CHRE project supported by the Romanian Academy and the Ministry of Culture and National Heritage. The Romanian website describes what happens to hoards after discovery to promote understanding of the historical value of such finds [E6].

5. Led to the creation of a new Masters' course in numismatics

Working in collaboration with CHRE, Leiden University launched a bespoke MA in 2018 to train the next generation of numismatists to research and upload hoard data, in keeping with CHRE standards of documentation. Each student is allocated a region in the Netherlands. Under supervision they make additions and corrections to the CHRE database so that their work becomes permanently useful. In addition, the CHRE project has hosted four summer internships in Oxford for students from the University of Tübingen in support of a numismatics course there. Recently Yale has provided USD20,000 to pay Yale students as interns to learn numismatic skills by entering data into the project's web application there under the supervision of the Curator of Numismatics at the Yale Art Gallery [E7]. In all cases interns gained experience in working with an online database, an awareness of how a database can benefit from external online resources, and an understanding of Linked Open Data and the semantic web.

7. Linked amateurs and professional archaeologists, community history and transnational history

The Twitter feed, launched 12.8.2019 [E9.2], links museum professionals, archaeologists, local detectorists, students and other people interested in ancient coinage. It currently has 254 followers. It weaves together threads describing community projects (such as hoard conservation by volunteers at Worcester Museum) with an account of the discovery of the Charlbury Hoard from amateur detectorist with posts on a new archaeological hoard find in Bulgaria, and generates discussion, for example on gold hoards from Britain [E9.3]. A display of Roman hoards found by local detectorists in the Money Gallery for the c. 850,000 annual visitors to the Ashmolean, was supplemented in 2020 by a new display on 'Lasers, Hoarding and Roman Gold Coinage'. It shows how high-tech 'metal detection' - laser ablation mass spectrometry - can be used to analyse trace elements, such as platinum, present in gold coin from the mid-4th century CE, revealing how and where the empire obtained bullion for its coinage as the balance of power shifted east [E8].

5. Sources to corroborate the impact (indicative maximum of 10 references)

E1. Online analytics and collaborations data

- a. Google analytics of the project website,
- b. An online list of the collaborations
- c. A map of the coin hoard data

E2. Bibliothèque royale de Belgique: email stating benefits of collaboration 28 August 2019.

E3. Staatliche Museen zu Berlin: email 05 August 2019.

E4. Israel Antiquities Authority

- 4.1 Email outlining terms of collaboration and progress 31 July 2016,
- 4.2 Summary of impact 21 July 2019

E5. A press release on Exhibition at Central Bank of Israel, from the Central Bank

E6. Emails documenting the collaboration with Romania

- 6.2 From the General Prosecutor of Romania (18 July 2019);
- 6.2 From the Police commissioner, Criminal Investigation Department, Cluj County Police Inspectorate (8 August 2019);

6.3 From Head of the English Department, Security Studies, University of Cluj-Napoca (22 July 2019).

E7. Dossier documenting the internships and educational opportunities opened by the project with Leiden, Tübingen, and Yale

7.1 – 7.5 Emails relating to new MA course from 04 April 2018; 08 June 2018;

21 August 2018; 08 January 2019; 05 Jul 2019;

7.6 A post about a research project undertaken in collaboration with the project;

7.7 A report from a Tübingen student who was able to undertake an internship through the project at Oxford, (September 10, 2017) via the Royal Numismatic Society

7.8 A report from a Tübingen student who was able to undertake an internship through the project at Oxford, (June 6, 2017) via the Royal Numismatic Society;

7.9 Yale: Email confirming collaboration (29 December 2016),

7.10 Yale: Email chain confirming grant to pay interns at Yale and expected benefits (last 11 June 2019)

E8. Online event listing for 'Lasers, Hoarding and Roman Gold Coinage' Special Display at the Ashmolean

E9. Coin hoards of the Roman Empire social media

9.1 Official Facebook account

9.2 Official Twitter account

9.3 A tweet about the Worcester volunteer-led conservation

9.4 A Twitter thread on the Charlbury hoard (1 March 2020)

9.5 A tweet from the Coin hoards of the Roman Empire project (15 April 2020)